Delta Adapts:
Creating a Climate Resilient Future
Agenda

- Status and Overview
- Review Equity Analysis Results
- Review Flooding Key Findings
- Review Water Supply Key Findings
- Review Ecosystem Key Findings
- Questions for Discussion
Council Updates

- February 2019: Council endorsed Resilience Goals
- November 2019: Council received update on Delta Adapts
- Summer/Fall 2020: Council briefing group updates
Delta Adapts =

Vulnerability Assessment + Adaptation Strategy

Overarching goal is to build climate resilience in the Delta
Goals

- Inform future Council work
- Help State prioritize future actions and investments
- Provide a toolkit of information for local governments to use in their regulatory documents
- Serve as a framework to be built upon by the Council and others in the future
Regional Study

- Regional approach
- Planning level study
- Different from other climate vulnerability assessments completed
- Designed to be complementary with other efforts
Climate Stressors & Hazards

- Climate Stressors:
  - Air Temperature
  - Precipitation and Hydrologic Patterns
  - Sea Level Rise

- Climate Hazards:
  - Extreme Heat
  - Wildfire
  - Drought
  - Flooding
Engagement Opportunities

- Ongoing collaboration with agency partners
- Stakeholder briefings
- Outreach to community-based organizations
- Technical Advisory Committee
- Stakeholder Work Group
Results and Key Findings

- Equity
- Flooding
- Water Supply
- Ecosystem
Equity Analysis

FACTORS THAT INCREASE VULNERABILITY | VULNERABLE POPULATIONS
# Factors that Increase Vulnerability

<table>
<thead>
<tr>
<th>Exposure</th>
<th>Flooding</th>
<th>Extreme Heat Events</th>
<th>Wildfire</th>
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</thead>
<tbody>
<tr>
<td>People experiencing homelessness</td>
<td>People experiencing homelessness</td>
<td>People experiencing homelessness</td>
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<tr>
<td>Emergency response workers</td>
<td>Outdoor workers</td>
<td>Outdoor workers</td>
<td>Outdoor workers</td>
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<tr>
<td>Mobile home residents</td>
<td>Young children</td>
<td>Residents of dense, urban areas</td>
<td>Residents of wildland-urban interface</td>
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<td>Sensitivity</td>
<td>Preexisting health conditions</td>
<td>Preexisting health conditions</td>
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<td>Age</td>
<td>Preexisting health conditions</td>
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<tr>
<td>Ability status</td>
<td>Preexisting health conditions</td>
<td>Ability status</td>
<td>Pregnancy</td>
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<td>Pregnancy</td>
<td>Preexisting health conditions</td>
<td>Pregnancy</td>
<td>Smokers</td>
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<tr>
<td>Adaptive Capacity</td>
<td>Access to information</td>
<td>Access to information</td>
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<tr>
<td>Income or other resources to repair damage, procure shelter</td>
<td>Access to air conditioning</td>
<td>Ability to evacuate</td>
<td>Ability to evacuate</td>
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<td>Access to healthcare</td>
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<td>Income or other resources to adapt living space</td>
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</tbody>
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Vulnerable Populations

Social vulnerability index (comprised of 14 indicators):
- Young children
- Older adults living alone
- Ability status
- Educational attainment
- Linguistic isolation
- Poverty status
- Race and ethnicity
- Tenancy
- Vehicle access
- Access to health insurance
- Asthma rate
- Cardiovascular rate
- Low birth weight rate
- Food security

Other vulnerable populations:
- Outdoor workers
- Incarcerated populations
- Institutionalized populations
- People experiencing homelessness
- People living in mobile homes
Early Application

Vulnerability to Climate Change in the Delta

Explore Social Vulnerability Indicators

Instructions:
Select the overall vulnerability rating or one of the 14 indicators from the dropdown menu to see data by census block group.

Click a region on the map to get more information about that census block group.

Toggles layers on and off in the upper right corner and hover over the map for additional information.

Enter latitude and longitude values below to place a pin on the map. Get a lat/long from an address here.

Copy the block group ID from the popup or enter a zip code into the search bar in the Data Explorer tab to filter data to that region.

% of households with limited English proficiency

This map was created in support of the Delta Adapt initiative, a project of the Delta Stewardship Council (2023).

Indicator Data
Delta + Suisun Marsh Boundary
Location Pin
Watersheds
County Boundaries
Outreach & Engagement

40+ Contacted
- Started with initial list from agency partners
- Asked “who else should we contact?” in each consultation

Organizations Consulted
- Alliance of Californians for Community Empowerment
- Common Ground
- Community Medical Centers
- Environmental Justice Coalition for Water
- Faith in the Valley – San Joaquin
- Fathers & Families of San Joaquin
- First 5 Association
- First 5 Yolo
- Little Manila Rising
- PUENTES
- Reinvent South Stockton Coalition
- Restore the Delta
- Rio Vista CARE
- Slavic Community Center
- Third City Coalition
- Yolo County Children’s Alliance
Flood Hazard Maps

MODELING + ANALYSIS APPROACH  |  CURRENT + FUTURE CONDITIONS
Modeling and Analysis Approach

- Builds on and adapts previously developed tools
- Considers a wide range of future climate changes:
  - Tide and storm surge
  - Sea level rise
  - Delta inflows
- Improves system understanding
- Flexibility to changing climate change information
Current Conditions

10% of the Delta exposed during a 100-year flood

2% of Delta population exposed during a 100-year flood
2050 Conditions

35% of the Delta exposed during a 100-year flood

Over 10% of Delta population (65,000 people) exposed during a 100-year flood, including over 11,000 people living in communities with highest social vulnerability
2085 Conditions

68% of the Delta exposed during a 100-year flood

20% of Delta population (over 120,000 people) exposed during a 100-year flood, including over 20,000 people living in communities with highest social vulnerability

44% of Delta population exposed during a 200-year event (mostly in Stockton and Pocket)
Adaptation to climate change should focus on the source of vulnerability.
What does this mean?

- Know where to target future levee investments
- Can estimate costs of keeping up with climate change
- Can test adaptation strategies
Water Supply

KEY FINDINGS
Key Findings

- Higher temperatures pose the greatest risk
- More variable precipitation is especially impactful during dry periods
- Sea level rise is of less concern
• Climate change will reduce Delta exports in all year types, but impacts will be disproportionately large in dry years, increasing drought vulnerability

• Droughts will get more common and worse
Ecosystem Analysis

ASSETS  |  SLR FINDINGS
Historical Ecosystem Loss

- Delta ecosystems are already heavily compromised
- 98% of freshwater tidal wetland have been lost
- Climate change will further compromise ecosystem health without substantial investments
Current Ecosystems: Un-leveed & Leveed

- Sea Level Rise (SLR) Scenarios
  - 6 inches
  - 1 foot
  - 2 feet
  - 3.5 feet
  - 6 feet (un-leveed)

Un-leveed
38,250 Acres

Leveed
132,688 Acres
Tidal Wetland SLR

- 53% of Delta Freshwater Wetland at risk under 3.5 feet SLR
- 100% of Delta Freshwater Wetland at risk under 6 feet SLR
- 100% of Suisun Marsh Brackish wetlands at risk under 3.5 feet SLR
SLR Upland Transition Space

Central Delta; Browns Island and Sherman Lake Wetlands: No upland connection

Cache/Yolo Complex; Lindsey Slough: Upland Connection
Liberty Island: Limited Upland Connection
Leveed Ecosystems

48% of Leveed Ecosystems at risk under 1 foot SLR during a 100-year flood

63% of Leveed Ecosystems at risk under 2 feet SLR during a 100-year flood

78% of Leveed Ecosystems at risk under 3.5 feet SLR during a 100-year flood

Deeply subsided Central Delta islands and Managed Wetlands in Suisun have highest risk

Levee maintenance is key to protection
Significance and Next Steps

SIGNIFICANCE  |  NEXT STEPS  |  DISCUSSION QUESTIONS
Significance of Delta Adapts

- First comprehensive climate change study of the Delta
- Developed comprehensive flood and water supply models that can be replicated and updated
- Identifies most socially vulnerable communities
- Extensive community outreach
- Collaboration between partner agencies and complementary studies
Next Steps

- Public Draft Vulnerability Assessment
- Final Vulnerability Assessment
- Begin Adaptation Strategy
Questions for Discussion

- Given our authority, what is the role of the Council in addressing these climate vulnerabilities? What is the role of other agencies and organizations?

- What other uses are there for the equity results and the social vulnerability index?

- Based on these findings, what are some initial adaptation strategies to consider?
Thank you

Web: deltacouncil.ca.gov/delta-plan/climate-change
Twitter: @DeltaCouncil